



**CITY OF COCKBURN  
DEVELOPMENT AREA NO.19  
SERVICING REPORT (VERSION 2)**

**DRAFT**

**Cardno BSD Pty Ltd**

ABN 77 009 119 000

Cardno BSD Centre

2 Bagot Road

Subiaco WA 6008

PO Box 155, Subiaco

Western Australia 6904 Australia

**Telephone: 08 9273 3888**

Facsimile: 08 9388 3831

International: +61 8 9273 3888

reception@cardno.com.au

www.cardno.com.au

DRAFT

Document Control					
Version	Date	Author		Reviewer	
		Name	Initials	Name	Initials
1	25 June 2007	Wayne Burns		Jeremy Cordina	
2	22 January 2008	Wayne Burns	<i>WB</i>	Wayne Burns	<i>WB</i>

"© 2006 Cardno (Qld) Pty Ltd All Rights Reserved. Copyright in the whole and every part of this document belongs to Cardno (Qld) Pty Ltd and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or in or on any media to any person without the prior written consent of Cardno (Qld) Pty Ltd."

**DEVELOPMENT AREA 19 –SERVICING REPORT (VERSION 1)**

**TABLE OF CONTENTS**

**1. INTRODUCTION..... 2**

    1.1 Background..... 2

    1.2 Site location..... 2

    1.3 Site Description ..... 2

**2. WATER SUPPLY ..... 3**

    2.1 Servicing Strategy ..... 3

    2.2 Cost Implications..... 3

**3. WASTEWATER ..... 4**

    3.1 Servicing Strategy ..... 4

        3.1.1 Existing Services ..... 4

        3.1.2 Proposed Connection..... 4

    3.2 Cost Implications..... 4

**4. ROADWORKS ..... 5**

    4.1 Road Upgrades..... 5

    4.2 Cost Implications..... 5

**5. STORMWATER..... 7**

    5.1 Cockburn Central & Solomon Road Development Areas – Arterial Drainage Scheme Review..... 7

    5.2 Development Area 19 Local Water Management Strategy ..... 7

    5.3 Proposed Stormwater Infrastructure..... 7

    5.4 Cost Implications..... 8

**6. GAS SUPPLY ..... 9**

    6.1 Servicing Strategy ..... 9

        6.1.1 Existing Services ..... 9

        6.1.2 Proposed Services ..... 9

    6.2 Cost Implications..... 9

**7. POWER SUPPLY ..... 10**

**8. TELECOMMUNICATIONS..... 11**

    8.1 Servicing Strategy ..... 11

---

## APPENDICES

APPENDIX A	Locality Plan
APPENDIX B	Water Corporation Existing Water Supply Mains
APPENDIX C	Proposed Water Distribution Main
APPENDIX D	Water Corporation Wastewater Planning
APPENDIX E	Proposed Arterial Drainage Scheme
APPENDIX F	Existing Gas Mains

DRAFT

## EXECUTIVE SUMMARY

This Servicing Report has been prepared by Cardno BSD for Koltasz Smith, Town Planning Consultants to further the development of the Area 19 District Structure Plan, to be submitted to and approved by the City of Cockburn and Western Australian Planning Commission.

The report identifies the existing service lines associated with various services necessary to be provided for the future development of the land in an urban form.

This report constitutes Version 2 of the report which is a revision of the report which was first prepared and submitted on the 25 June 2007. The revised version provides further information and clarification of details which were unavailable at the time the initial version was produced.

DRAFT

## 1. INTRODUCTION

### 1.1 Background

Koltasz Smith and Associates are currently preparing a District Structure Plan (DSP) for the area depicted as Development Area No.19 under the City of Cockburn's Town Planning Scheme No.3. As part of the preparation of the DSP, details for the future servicing of the site are required. To this end, Cardno BSD have been commissioned by Koltasz Smith on behalf of the City of Cockburn and associated landowners to undertake investigations on the servicing requirements to facilitate the preparation of the DSP and ultimately the lands development. This report represents the findings of these investigations.

### 1.2 Site location

Development Area 19 is located within the City of Cockburn, approximately 16km south of the Perth Central Business District and 10km south east of Fremantle. The site is bounded by the Kwinana Freeway road reservation to the east, North Lake Road to the south, Semple Court to the west and Verna Court to the north. The established residential suburb of South Lake abuts the site west of Semple Court.

### 1.3 Site Description

The site is comprised of some 86 properties, with the majority of these being between 5,000m<sup>2</sup> to 2.0ha in area. The properties are largely occupied by semi-rural/residential uses, with dwellings surrounded by paddocks and pockets of existing vegetation and dampland areas scattered throughout.

## 2. WATER SUPPLY

### 2.1 Servicing Strategy

Preliminary advice from the Water Corporation has indicated that existing 150mm dia water reticulation mains are located directly south (North Lake Rd) and east (Kentucky Ct) of the site, however these mains have insufficient capacity to service the lot yields which are expected to be generated from the development of the site. In this regard, a 400mm dia steel water distribution main exists approximately 550 metres south of the site, within the Beeliar road reserve, which is large enough to be able to service the site.

The location of these existing Water Mains is indicated on the drawings found under Appendix B.

In order to connect the site to this main, an extension would be required to be made, which would most likely be located within the North Lake road reserve and connect to the site via the Kentucky road reserve, as shown in the drawing found within Appendix C.

### 2.2 Cost Implications

The total cost of extending the 400mm dia water distribution main is estimated to be in the order of \$550,000. This extension will constitute a pre-funded item for which the capital expenditure of constructing the main would be refunded to developers over a timeframe, which would be negotiated with the water Corporation. The cost of providing the extension would not constitute an item under any future cost contributions scheme and would be a cost which the Water Corporation would require initial subdividers/developers within the site to take on.

Standard headworks contributions will be required to be paid by developers on a per lot basis, currently headworks costs for this location are being charged at a rate of \$3,183 per lot.

### **3. WASTEWATER**

#### **3.1 Servicing Strategy**

##### **3.1.1 Existing Services**

The Water Corporation have advised that a 600mm dia sewer main is currently being constructed within the North Lake road reserve, which abuts the mixed use zone that forms the southern boundary of Development Area No.19. Construction of this main is expected to be completed within the second half of 2007 and will provide sufficient capacity to service the sites wastewater disposal requirements.

Furthermore, a 225mm dia sewer main currently extends adjacent to Berrigan Drive, which connects to Semple Court at the sites northwestern corner. Both sewer mains connect back to the Water Corporation's Jandakot Pump Station No.1 located on Barrine Gardens in South Lake.

The Water Corporation's wastewater planning for the region is attached under Appendix C.

##### **3.1.2 Proposed Connection**

Given the proximity of wastewater mains with sufficient capacity to service the site, connection to the regional reticulated wastewater system would be able to be made by connecting to the existing mains that lie adjacent to the site.

#### **3.2 Cost Implications**

Given the above, pre-funded capital connections costs will be able to be maintained to a minimum, however, developers will be required to cover the cost of reticulation systems within land holdings and standard headworks contributions will be required to be paid on a per lot basis.

Headworks costs within this location are currently being charged at a rate of \$1,469 per lot.

## 4. ROADWORKS

### 4.1 Road Upgrades

The road network proposed within the Draft DSP requires the construction and modification of roads, which are considered to provide benefit to the entire development area as opposed to only those new lots abutting them. In this regard, some of the roads proposed are internal within the plan and provide a direct benefit to the land in terms of facilitating for traffic and providing access to future lots. Other roadworks are external from the site and are necessary to facilitate the proposed design.

These roadworks are as follows:-

- The upgrade of Muriel Ct and Kentucky Court to the standard of a Neighbourhood Connector A as described in Liveable Neighbourhoods;
- The upgrade of the southern portion of Semple Court (approx 250m) to the standard of an Integrator B as described in Liveable Neighbourhoods;
- The construction of a realigned northern portion of Semple Court (apprx 850m) to the standard of an Integrator B as described in Liveable Neighbourhoods;
- The realignment and construction of the southern portion of Elderberry Drive, to the standards of the existing road (10m wide pavement);
- The construction of signalised traffic intersections at the junction of Berrigan and Elderberry Drive, Semple Court and North Lake Drive and Kentucky Court and North Lake Drive.
- The upgrade of North Lake Road to a dual carriageway with central median strip and dual use path.

### 4.2 Cost Implications

The table below provides estimated construction costs for the various works described above. In considering the costs provided below it should be noted that the figures provided have been prepared on current construction rates, without the benefit of any initial engineering investigations or detailed design. Accordingly these costs do not account for any required earthworks or road level changes, road drainage costs, the relocation, raising or lowering of existing services or site remediation costs.

<b>Development Area 19 - Regional Roadworks</b>		
<b>Item</b>	<b>Total Cost</b>	<b>Difference</b>
<b>Standard Access Road</b>		
<b>Internal Roads</b>		
<u>New Semple Ct (850m)</u> - Constructed to Integrator B standard and includes 2 roundabouts and paved median	\$800,000	\$450,000
<u>Old Semple Ct (250m)</u> - Constructed to Integrator B standard and includes the demolition and removal of the existing road surface	\$230,000	\$135,000
<u>Muriel/Kentucky Ct (1375m)</u> - Constructed to Neighbourhood Connector A standard and includes the demolition and removal of the existing road surface	\$1,200,000	\$680,000

<b>External Roads</b>		
<u>Eldeberry Drive (250m)</u> - Constructed to the standards of the existing road and includes terminating Culs-de-sac	\$260,000	
<u>Berrigan Drive Intersection</u> - Traffic signal controlled intersection, including civil works and traffic management during construction	\$480,000	
<u>Semple Ct Intersection</u> - Traffic signal controlled intersection, including civil works and traffic management during construction	\$430,000	
<u>Kentucky Ct Intersection</u> - Traffic signal controlled intersection, including civil works and traffic management during construction	\$430,000	
<u>Modifications to Semple Ct</u> - Includes the demolition and removal of existing pavement and kerbing and installation of new pavement and kerbing.	\$65,000	

Costs for internal roads indicate not only the final estimated total for construction of the road but also the difference in cost due to the roads regional function. In this regard items such as the additional pavement area, kerbing and median strip paving requirements constitute the difference in cost in comparison to if the road was constructed to an access road standard. In considering these items for any cost contribution scheme, it is there fore reasonable that the refund to affected landowners comprise this difference only rather than any contributions scheme being utilised to fully fund the cost of roads.

With respect to external roadworks, no land within the development area benefits directly from these works but rather there is an overall benefit to the development area in facilitating the proposed design, accordingly it is considered that any cost contributions scheme covering these items should apportion the cost of works out amongst units on a pro-rata basis.

Further to the above, it should be noted that with respect to the upgrade works to North Lake Road, units created from within the development area are considered to represent only a portion of users benefiting from its upgrade and therefore any contributions towards improvements to this road, should be relative to the percentage patronage of the road resulting from the development of the site.

## 5. STORMWATER

### 5.1 Cockburn Central & Solomon Road Development Areas – Arterial Drainage Scheme Review

Prior to the preparation of the Development Area 19 District Structure Plan commencing, the City of Cockburn commissioned David Wills and Associates (DWA), to undertake a study of the subject site and surrounding lands titled the Cockburn Central & Solomon Road Development Areas – Arterial Drainage Scheme Review (ADSR), to assist in resolving technical issues associated with the provision of an integrated stormwater drainage system, to facilitate the anticipated future development of the site and surrounding areas.

The study separates its study area into 8 'sub-catchment areas' of which the subject site comprises areas 4, 5 and 6 as shown in Appendix 4 attached. The study proposes a strategy 'to formalise the drainage flow paths into Lake Yangebup, whilst maximising infiltration and implementing sound water resource management principles to assist in improving water quality discharging to Lake Yangebup.'

The study also recommends a suitable groundwater control level be adopted which can be maintained by way of groundwater control basins or subsoil drainage which then flow to Yangebup Lake.

### 5.2 Development Area 19 Local Water Management Strategy

The Local Water Management Strategy (LWMS) was prepared by Cardno BSD to develop a strategy for stormwater management that closely follows the principals of the DWA Arterial Drainage Scheme Review, relevant to the District Structure Plan proposed.

Sub-catchment areas provided in the ADSR report were altered only slightly for the LWMS to suit the proposed District Structure Plan for Development Area 19. Based upon the altered catchment areas and proposed zoning of the District Structure Plan, approximate volumes of runoff were determined for each catchment area to provide a better understanding of the likely best method of stormwater management.

As design levels are yet to be determined for Development Area 19, a detailed recommended strategy was not provided. However, available options and recommendations for stormwater management were provided.

### 5.3 Proposed Stormwater Infrastructure

Stormwater infrastructure for the development on a regional scale would require:-

- The upgrading of both the existing Semple Court and North Lake Road open drain to a landscaped channel;
- The extension of the existing 450mm diameter pipe under Berrigan Drive to connect Development Area 19 up to 'Lakelands', groundwater collection and compensating basins/swales;
- A subsoil drainage network required to assist in setting the regional groundwater control level; and
- Outlet pipes within basins in POS to discharge to the regional network.

### 5.4 Cost Implications

The table below provides estimated construction costs for the various stormwater treatment works described above. In considering the costs provided below it should be noted that the figures provided have been prepared on current construction rates, without the benefit of any initial engineering investigations or detailed design. Accordingly these costs do not account for any required earthworks, fill or level changes, road drainage costs, the relocation, raising or lowering of existing services or site remediation costs.

<b>Development Area 19 - Regional Stormwater Works</b>	
<b>Item</b>	<b>Total Cost</b>
<b>External Infrastructure</b>	
<u>New Semple Ct Open Drain (3000sq.m)</u> - Constructed to North Lake Road Open Drain with Landscaping and Landscaping Features	\$150,000
<u>North Lake Road Landscaped Channel (20000sq.m)</u> - Constructed from Kentucky Ct to Lake Yangebup with Landscaping and Landscaping Features	\$1,000,000
<u>Berrigan Drive Pipeline Extension (350m)</u> - Constructed from site to Berrigan Dr with associated connections and road crossings	\$110,000
<b>Internal Infrastructure</b>	
<u>Groundwater Collection and Compensating Basins (6000sq.m)</u> - Constructed within POS to included some landscaping	\$72,000
<u>Basin Discharge Pipework (1850m)</u> - 300mmdia pipeline from basins to regional network, including trenching	\$140,000
<u>Subsoil Drainage (2050m)</u> - Subsoil drainage to control groundwater level throughout major roads and POS where no Groundwater Collection Basin	\$175,000

With respect to the above stormwater drainage costs, all lots within the development area are considered to benefit equally from the completion of these works and accordingly it is considered that any cost contributions scheme covering these items should apportion the cost of works out amongst units on a pro-rata basis

## **6. GAS SUPPLY**

### **6.1 Servicing Strategy**

#### **6.1.1 Existing Services**

The drawing provided under Appendix 5 indicates the location of current gas mains existing within the land and surrounding area. In this regard, the red lines depict high pressure gas transmission lines, which are accessible to the site from its southern (North Lake Rd) and eastern (Kentucky Ct) boundaries. The green lines depict medium pressure gas transmission lines, which traverse the site within the Muriel Court road reserve and are also accessible to the site from its western (Semple Court) and northern (Verna Ct) boundaries.

#### **6.1.2 Proposed Services**

Whilst gas services will be able to be connected to the site via the existing service lines detailed above, Alinta has advised that it is difficult to determine if the existing infrastructure has the capacity to service the area without any knowledge of timing or staging of the development, however it is likely that some reinforcement of the existing network will be required if the entire site was to be developed in the near future.

### **6.2 Cost Implications**

Any reinforcement of the existing service network would require capital contributions from developers, however, given that the need or extent of any upgrades is at this stage unknown, the costs of strengthening the service are unable to be determined.

DRAFT

## 7. POWER SUPPLY

Based on the Current Western Power network within the area, servicing the sites power requirements will involve the following:

Existing Transmission Towers of 330kV and 132kV remain in a corridor to the south of the subdivision, which will not impact on the lots facing North Lake Rd, the easement, however will have a visual impact on the Mixed Use Business lots, unless North Lake Rd is realigned in which case new easement requirements may apply.

A high Voltage 22kV cable is currently installed on the north side of North Lake Rd, which appears to be a dedicated feeder from APM Zone Substation, and may not be available for supply to this area.

Other High Voltage aerials exist around the proposed area, which would indicate that some small stage development could occur without significant infrastructure being needed prior to any residential lots being released.

However, in order for the total area to be completed and based on the R codes supplied, a new High Voltage feeder would be required from APM Zone substation to supply the total demand. The funding for this would be on a full cost basis and implemented on the current Western Power Economic System Pool, where the Developer pays a per kVA system charge on the residential lots which in turn allows Western Power to credit the high voltage costs back to the Developer via the HV system pool.

At present commercial and industrial lots are not included in the System Pool, so are at full cost to the Developer unless they are included with a residential stage and the residential load is greater than the commercial load.

With this in mind it would be expected to start initial development in the residential area.

Current costs per lot for materials for residential lots are in the order of \$4,200 per lot. Costs for commercial lots are in the order of \$10-12k per lot.

## 8. TELECOMMUNICATIONS

### 8.1 Servicing Strategy

Telstra have provided advice indicating that they could provide telecommunications services to dwellings within the development, which includes the following: -

- Up to 4 telephone services to each dwelling;
- High speed internet service 10 & 20Mbps (scaleable up to 100Mbps);
- Foxtel digital subscription TV service;
- Digital free to air television service (providing a desirable 'clean roof' development); and
- Next G (3G) mobile coverage.

Telstra have indicated the cost for connection of the above services would be at \$3,150 per dwelling, which is a cost, which would be taken on by developers at construction. No regional connection costs would apply at a district structure planning level.

DRAFT

**APPENDIX A**

**Locality Plan**

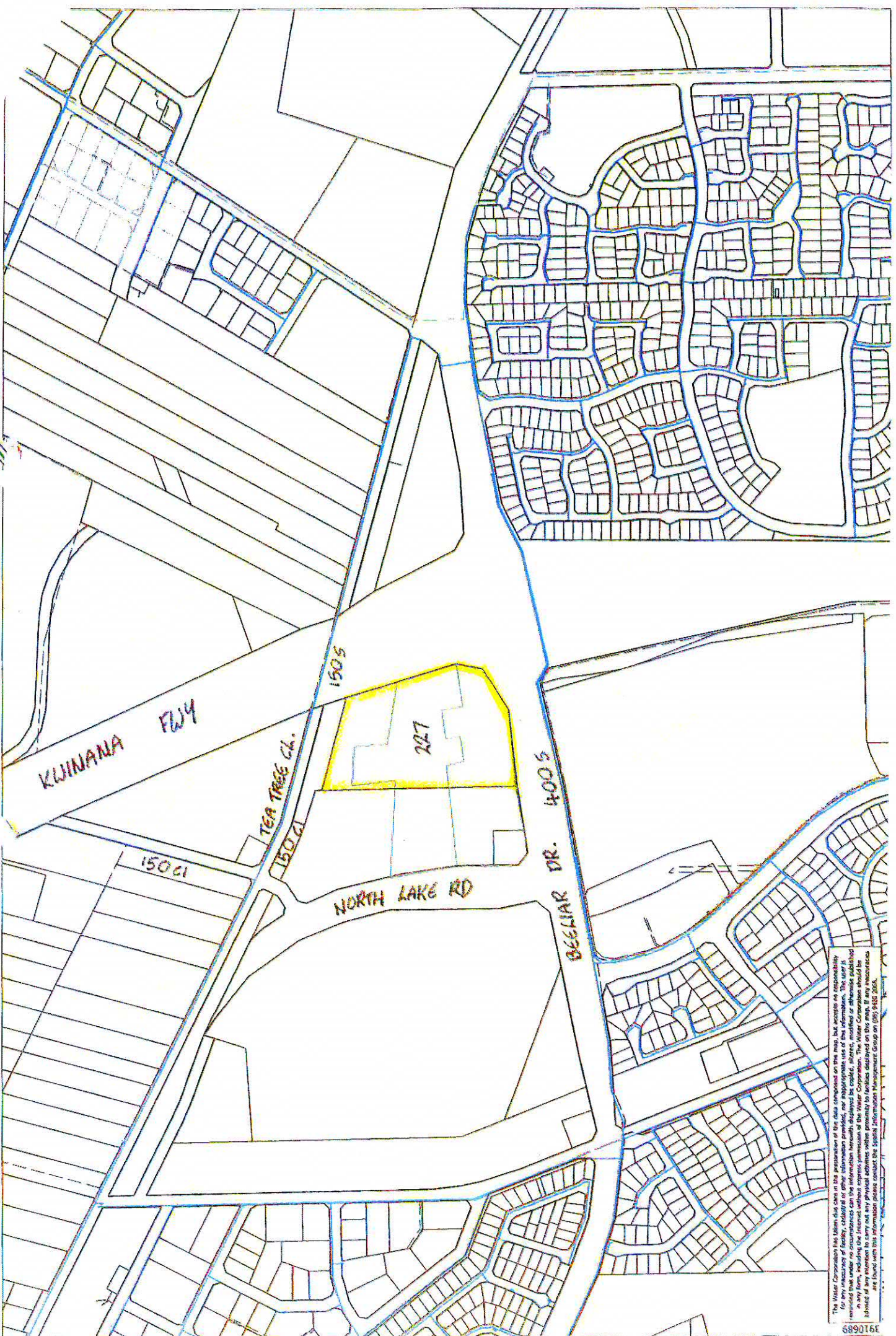
**DRAFT**



**Water Corporation Existing Water Supply Mains**

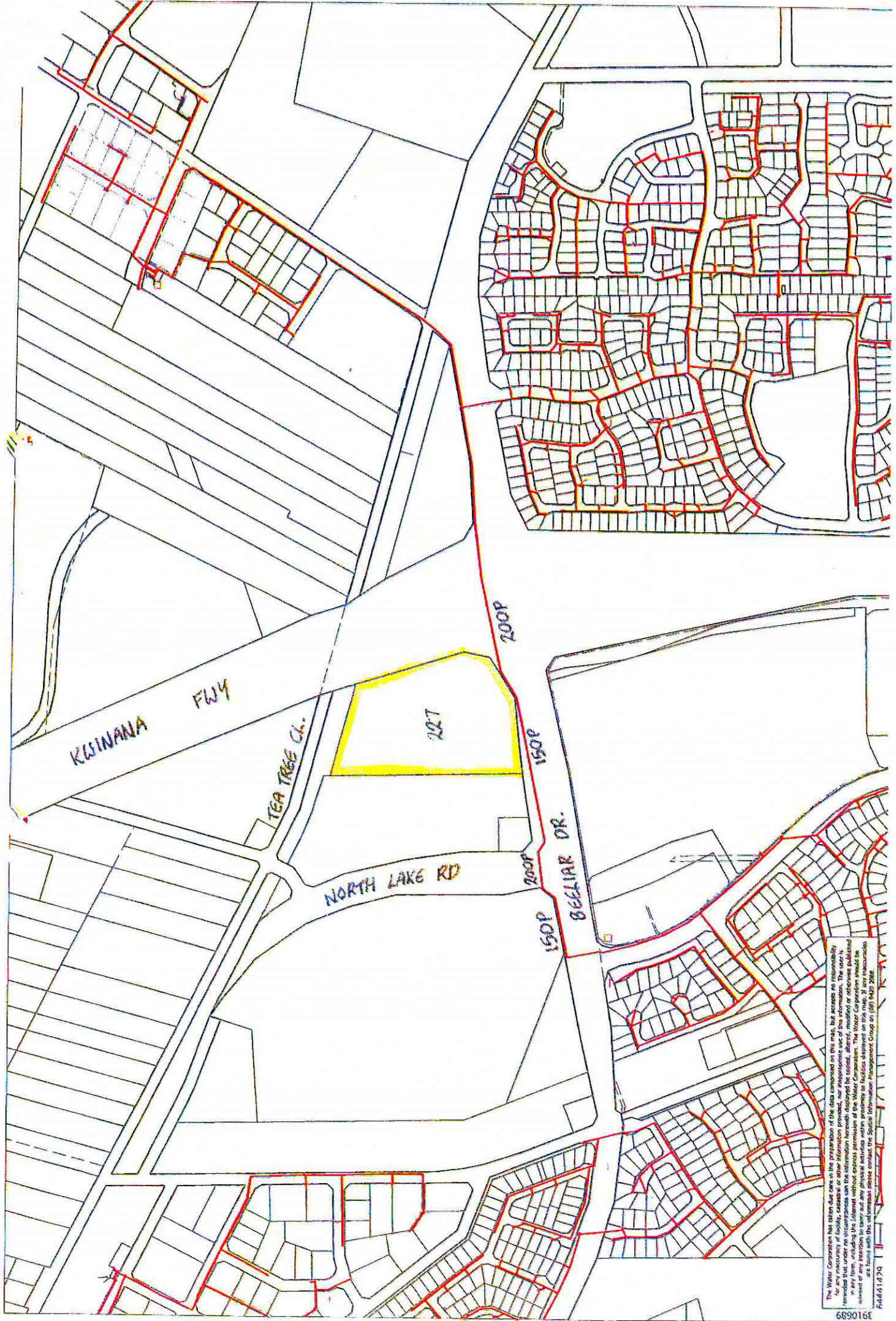
**DRAFT**

TACTICAL - EMERGENCY WATER RIGHTS



The Water Corporation has taken due care in the preparation of the data contained on this map, but accepts no responsibility for any inaccuracies of facility, color, or other information provided, nor appropriate use of the information. The user is advised of any inaccuracies of any information to carry out any physical activities with proximity to facilities displayed on this map. If any inaccuracies are found with this information please contact the Spatial Information Management Group on (08) 9433 2055.

Map 11-10-2011 2 - 10/11/2011 2 - 10/11/2011 2



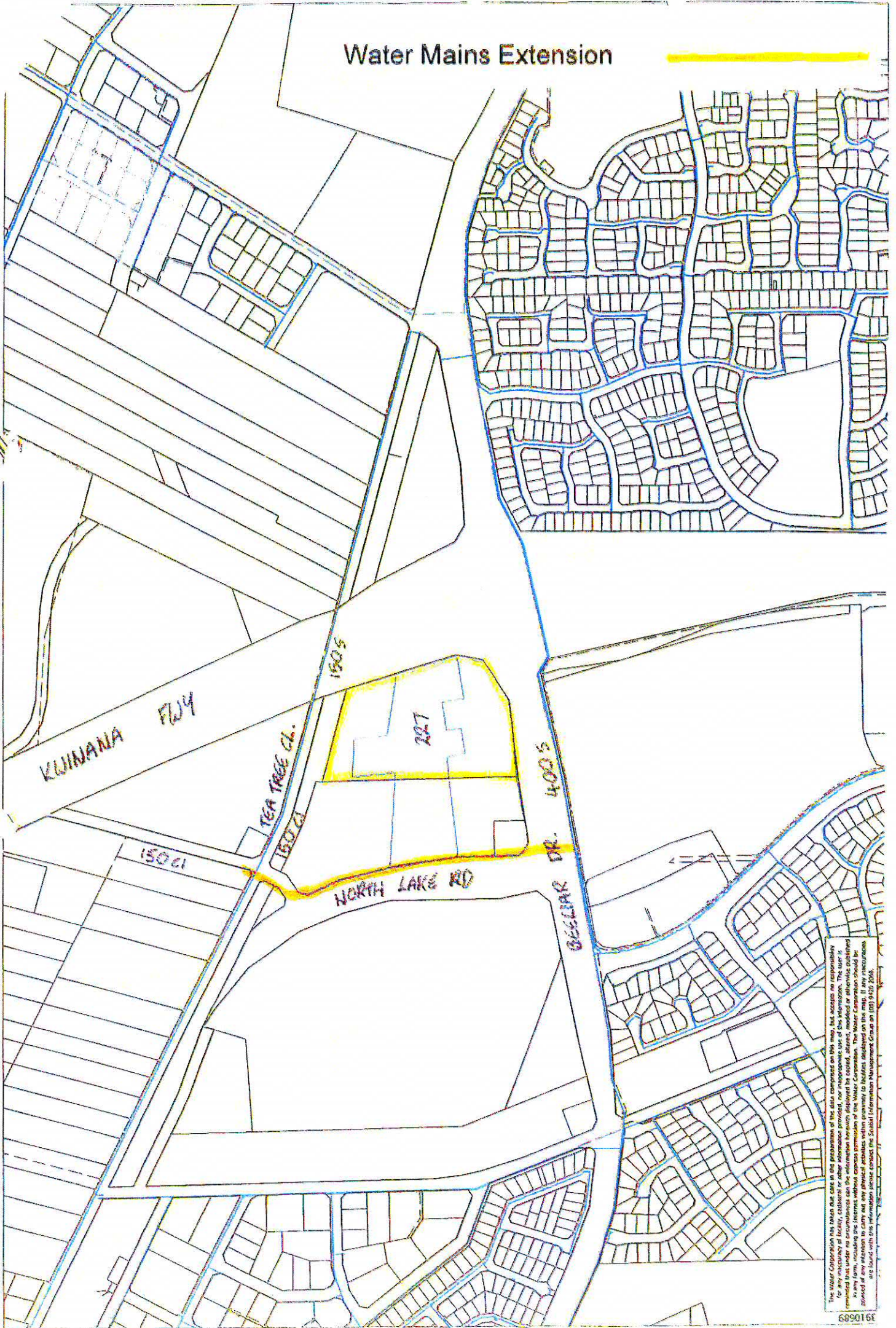
The Water Corporation has taken due care in the preparation of the data connected to this map. We accept no responsibility for any inaccuracy of facility, existence or other information provided, our employees use of this information. The user is advised that under no circumstances can the information hereafter displayed be used, altered, modified or otherwise published without our express permission at the Water Corporation. The Water Corporation should be held liable for any errors or omissions in this map. If any inaccuracies are found with this information please contact the Spatial Information Systems Group on (08) 9497 2888.

64441479

**Proposed Water Distribution Main**

**DRAFT**

# Water Mains Extension



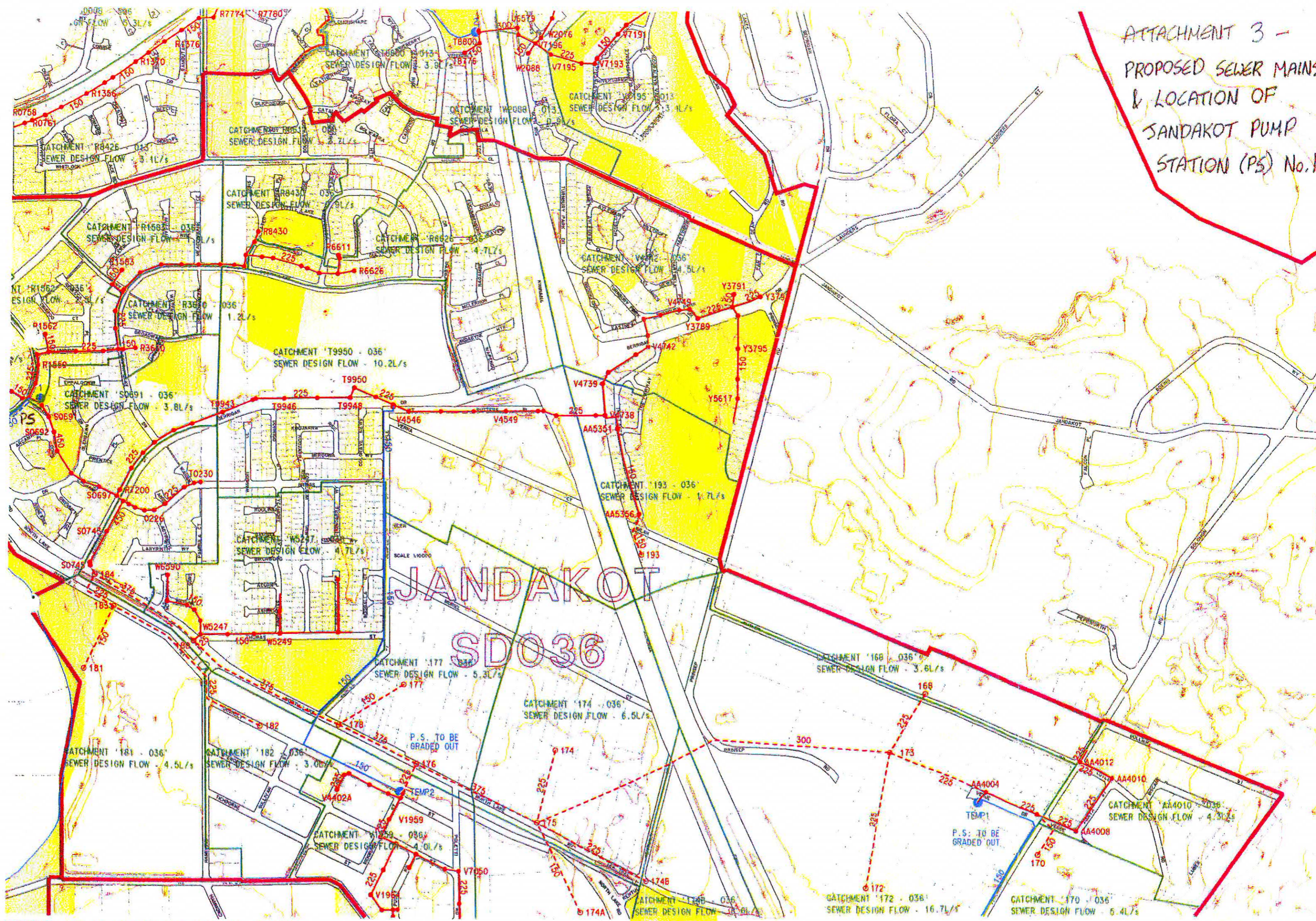
7/1/05  
S  
4  
14  
15

310689  
The Water Corporation has taken all care in the preparation of this map, but accepts no responsibility for errors or omissions. The information is provided for general information only and should not be relied upon for any legal or financial purposes. The Water Corporation should be contacted for any further information. The Water Corporation is not responsible for any loss or damage arising from the use of this map. If any inaccuracies are found with this information please contact the Spatial Information Management Group on (08) 9420 2000.

**Water Corporation Wastewater Planning**

**DRAFT**

ATTACHMENT 3 -  
PROPOSED SEWER MAINS  
& LOCATION OF  
SANDAKOT PUMP  
STATION (PS) No.1

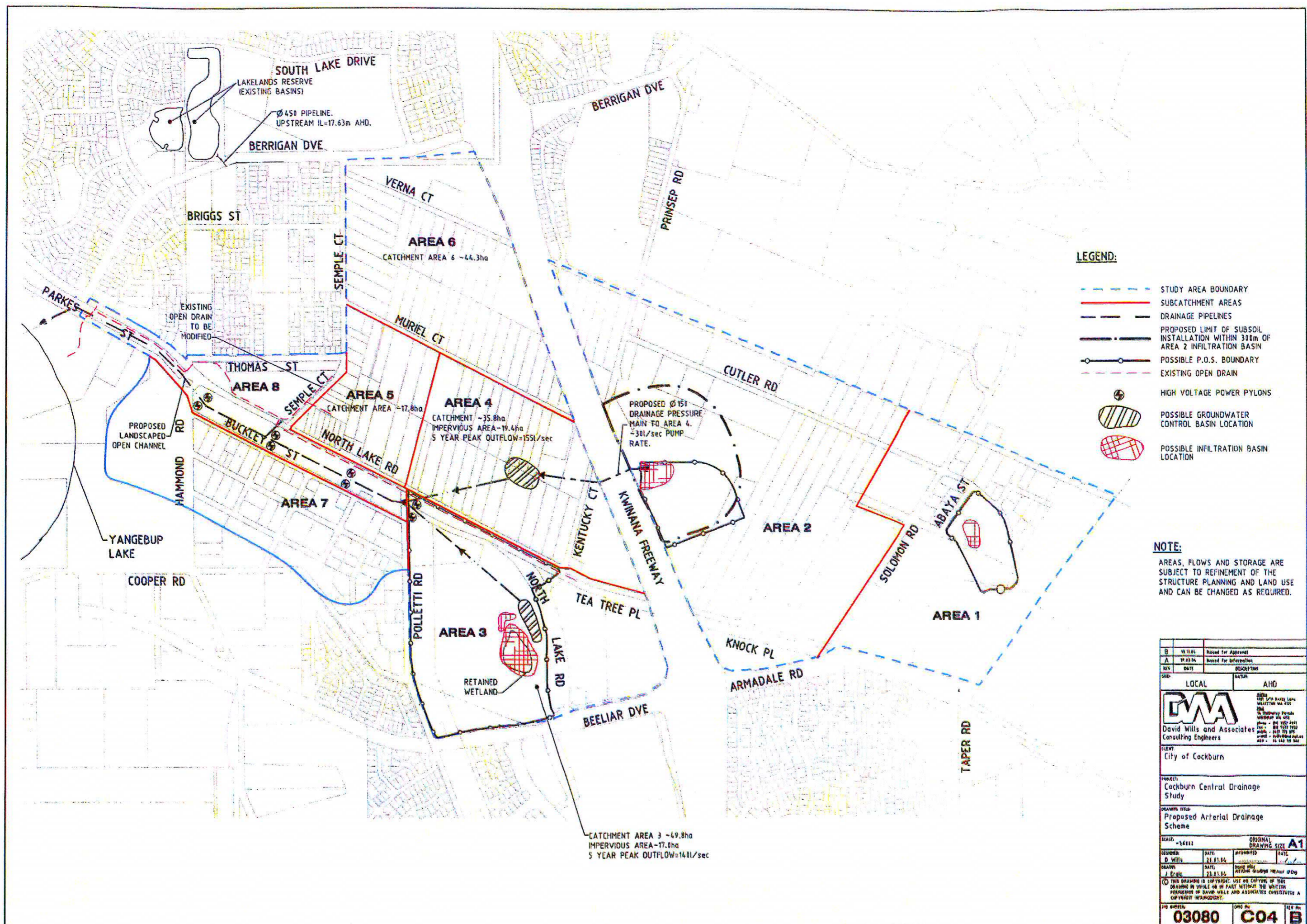


PRINTING AND IS SUBJECT TO ONGOING REVIEW  
ACCURACY OF DATA SUPPLIED BY EXTERNAL AGENCIES.

© THIS PLAN IS THE PROPERTY OF THE WATER CORPORATION AND NO PART SHALL BE COPIED WITHOUT PERMISSION.

**Proposed Arterial Drainage Scheme**

**DRAFT**



- LEGEND:**
- - - - - STUDY AREA BOUNDARY
  - - - - - SUBCATCHMENT AREAS
  - - - - - DRAINAGE PIPELINES
  - · - · - PROPOSED LIMIT OF SUBSOIL INSTALLATION WITHIN 300m OF AREA 2 INFILTRATION BASIN
  - ○ - POSSIBLE P.O.S. BOUNDARY
  - - - - - EXISTING OPEN DRAIN
  - HIGH VOLTAGE POWER PYLONS
  - POSSIBLE GROUNDWATER CONTROL BASIN LOCATION
  - POSSIBLE INFILTRATION BASIN LOCATION

**NOTE:**  
 AREAS, FLOWS AND STORAGE ARE SUBJECT TO REFINEMENT OF THE STRUCTURE PLANNING AND LAND USE AND CAN BE CHANGED AS REQUIRED.

REV	DATE	DESCRIPTION
B	19.12.04	Issued For Approval
A	17.03.04	Issued For Information
REV	DATE	DESCRIPTION
LOCAL		DRAWN
AHD		CHECKED
<b>DWA</b>		
David Wills and Associates Consulting Engineers		
CLIENT: City of Cockburn		
PROJECT: Cockburn Central Drainage Study		
DRAWING TITLE: Proposed Arterial Drainage Scheme		
SCALE:	1:64111	ORIGINAL DRAWING SIZE: <b>A1</b>
DESIGNED:	D. WILLS	DATE: 22.01.04
DRAWN:	J. Egan	DATE: 22.11.04
<small>THIS DRAWING IS COPYRIGHT. USE OR COPYING OF THIS DRAWING IN WHOLE OR IN PART WITHOUT THE WRITTEN PERMISSION OF DAVID WILLS AND ASSOCIATES CONSTITUTES A COPYRIGHT INFRINGEMENT.</small>		
JOB NUMBER:	03080	REV No: <b>C04 B</b>

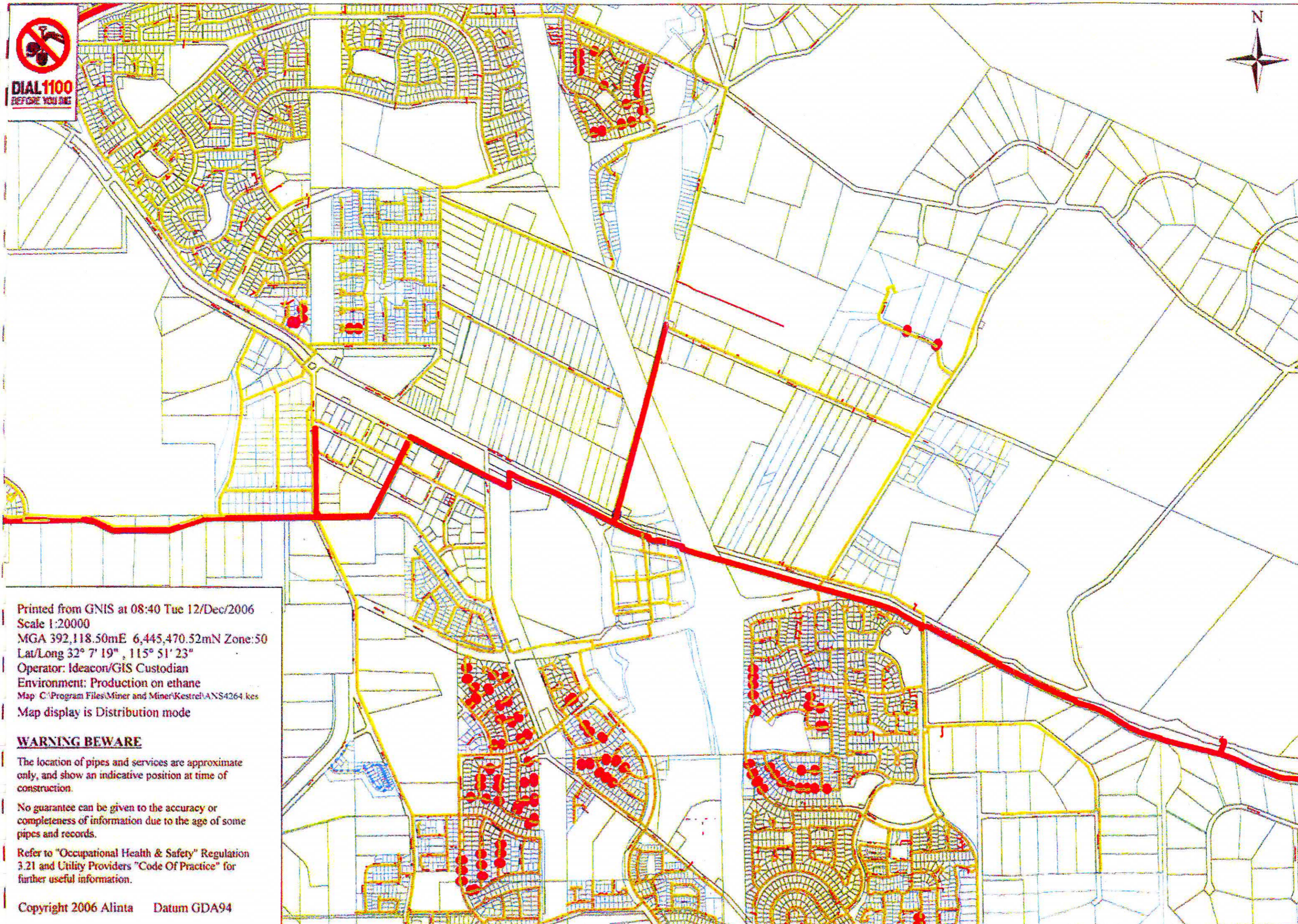
**APPENDIX F**

**Existing Gas Mains**

**DRAFT**



**DIAL 1100**  
BEFORE YOU DIG



Printed from GNIS at 08:40 Tue 12/Dec/2006  
Scale 1:20000  
MGA 392,118.50mE 6,445,470.52mN Zone:50  
Lat/Long 32° 7' 19" , 115° 51' 23"  
Operator: Ideacon/GIS Custodian  
Environment: Production on ethane  
Map C:\Program Files\Miner and Miner\Kestrel\ANS4264.kes  
Map display is Distribution mode

**WARNING BEWARE**

The location of pipes and services are approximate only, and show an indicative position at time of construction.

No guarantee can be given to the accuracy or completeness of information due to the age of some pipes and records.

Refer to "Occupational Health & Safety" Regulation 3.21 and Utility Providers "Code Of Practice" for further useful information.